



# Abdominal Tuberculosis Managed Surgically in the Late Phase: A Case Report

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About 1–5 % of cases of tuberculosis (TB) have uncommon abdominal conditions, and affect primarily young adults. The clinical diagnosis is challenging and often delayed due to the symptoms being non-specific and may be confused with other bowel diseases, therefore resulting in significant morbidity and mortality. A 27-year-old man was brought to our emergency department with the complaints a fever and abdominal pain. According to the chest X-ray findings taken 24 hours previously, pulmonary TB was suspected. Abdominal TB associated intestinal obstruction, ascites and lymphadenopathy were found by computed tomography and exploratory laparotomy. He was treated surgically by segmental resection, however passed away due to severe bleeding caused by the recurrence of perforation of the small intestine and sepsis. This case of systemic TB highlights the difficulties in diagnosis and treatment in time. The early diagnosis and timely treatment are both necessary to manage the disease successfully.

**Key words:** *abdominal tuberculosis, extrapulmonary tuberculosis, intestinal tuberculosis, mycobacterium tuberculosis*

## Introduction

Tuberculosis (TB) remains a major burden of healthcare globally, an estimated prevalence of TB is 10.4 million people and is the ninth leading cause of death worldwide.<sup>1</sup> Abdominal TB is an uncommon presentation in 1–5 % of TB cases, primarily affecting young adults.<sup>2,3</sup> The pathogenesis is likely via lymphohematogenous spread originated from a primary pulmonary focus, ingestion of infected sputum, or direct spread from infected adjacent lymph nodes. Intestinal, peritoneal and nodal forms are the major types of abdominal TB, all above may coexist clinically. The clinical diagnosis is challenging and often delayed due to the symptoms being non-specific and may be confused with other bowel diseases, therefore subsequently delayed the initiation of anti-tuberculous therapy, finally resulting in significant morbidity and

mortality.<sup>4</sup> The diagnosis of abdominal TB relies on a combination of clinical signs, imaging, laboratory methods, bacteriological and histopathological findings, neither one alone can establish the diagnosis. Due to its rarity and the multitude of possible presentation, high index of clinical suspicion and awareness are required.<sup>5</sup> We herein present a case of systemic TB combined pulmonary and abdominal TB which was managed surgically in the late phase of the disease.

## Case Report

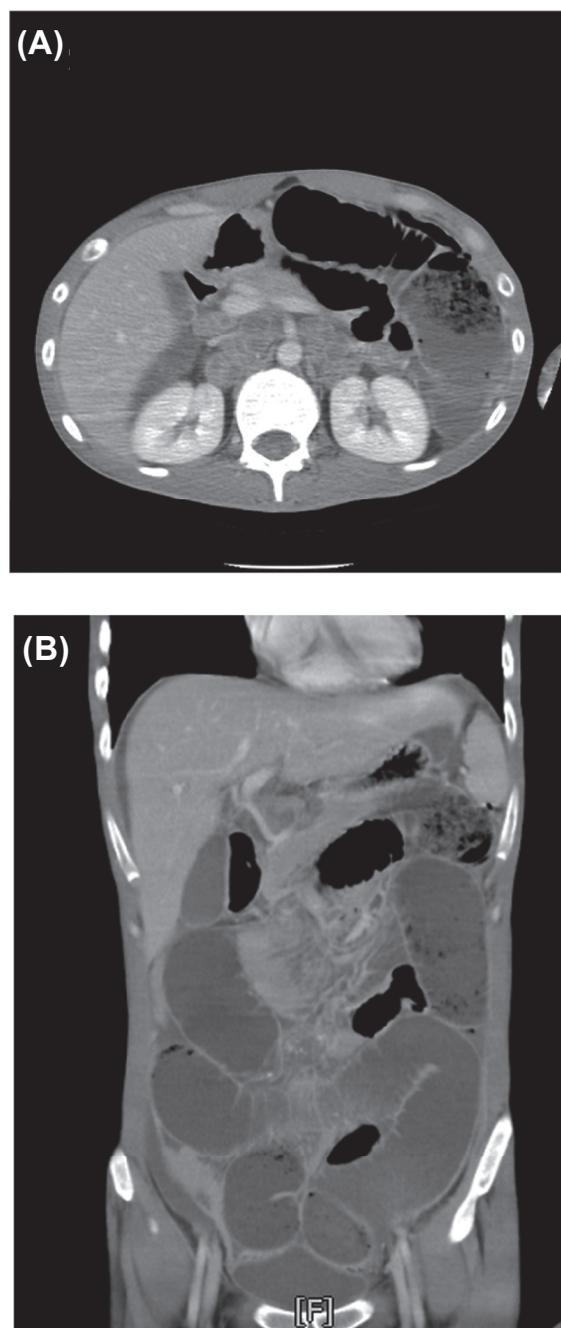
A 27-year-old man was brought to our emergency department (ED) with the complaints as a fever (38.4°C), abdominal fullness, diarrhea, severe left upper abdominal pain for three days, and one episode of vomiting on the previous day. In addition, the patient was admitted to another hospital one day before, been

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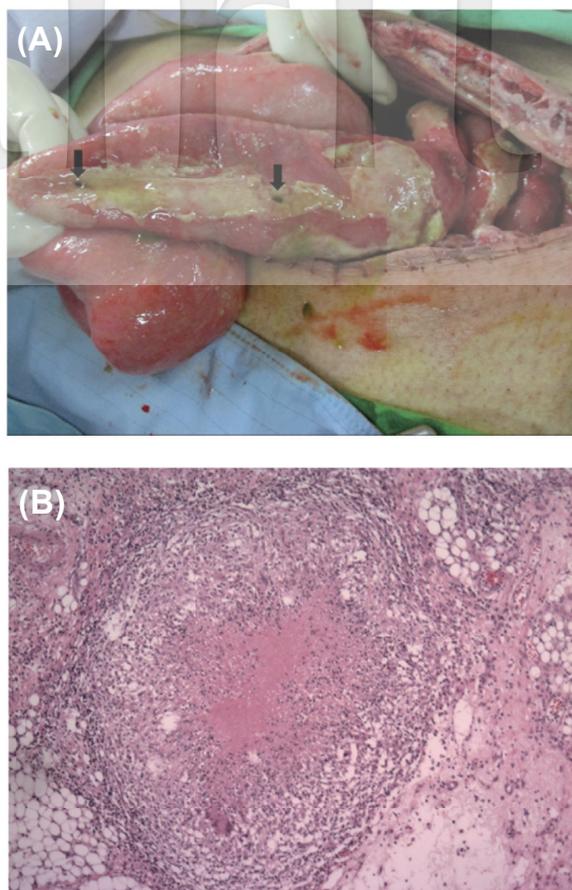
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suspected as pulmonary TB on the basis of chest X-ray findings and the complaints of coughing and fatigue noted for one year. Sputum for TB culture and acid-fast staining were negative. He was half Taiwanese and half Indonesian, stayed in Taiwan for three years without Taiwan nationality and alien resident certificate. Physical examination revealed the pale conjunctiva, left lateral neck swelling, bilateral crepitation and left upper tenderness of abdomen. Laboratory tests revealed an increased white blood cell count (19,810/mm<sup>3</sup>) and an increased C-reactive protein level (21.3 mg/dL), infectious or inflammatory diseases were considered. Human immunodeficiency virus antibody, hepatitis C antibody, and hepatitis B surface antigen were all negative. Abdominal computed tomography (CT) and plain abdominal film showed disproportional dilatation of small intestine and extraluminal gas, indicating intestinal obstruction. Minimal ascites and multiple enlarged peripancreatic and retroperitoneal lymph nodes with necrosis were noted by abdominal CT as well (Fig. 1). Abdominal TB was highly suspected and exploratory laparotomy was suggested, however refused by patient's family members because of economic consideration since the patient did not have any health insurance including Taiwan National Health Insurance. He was transferred to intensive care unit due to worsen abdominal symptoms, fever up to 39.1°C and oxygen desaturation on the third day after ED admission. Exploratory laparotomy was performed on the fifth day until the consent was signed by patient's family members. Multiple perforation was found on jejunum and ileum, intra-abdominal abscess around 5,000 mL and severe adhesions were noted, gangrenous appearance was found in the appendiceal wall, all together generalized peritonitis and sepsis caused by abdominal TB was diagnosed (Fig. 2A). Drainage of intra-abdominal abscess and incidental appendectomy was performed. Histopathological examination revealed caseous granulomatous inflammation on the small intestine and appendix, and perforations of the small intestine (Fig. 2B), both are typical features of abdominal TB, and without surprise, no prominent acid-fast organism was found. Sputum from endotracheal tube were collected three days consecutively for TB culture, acid-fast staining and TB real-time polymerase chain reaction (PCR). Two of 3 cultures *Mycobacterium tuberculosis* (Mtb) complex were identified, all smears showed scanty staining, and real-time PCR showed low amount of

Mtb. On the second day after surgery, hemoglobin level was dropped to 7.5 g/dL and bloody turbid ascites was noted and anastomosis leakage or hollow organ perforation was suspected. Standard bacterial



**Fig. 1.** Postcontrast CT scan. (A) Axial view showed the necrotic intra- and retro-peritoneal lymph nodes; (B) coronal view showed the distended intestinal loop and calcified lymph nodes. The severe adhesion and obstruction were also noted.



**Fig. 2.** Findings of exploratory laparotomy. (A) Caseous appearance was observed over the distended small intestine with multiple perforations (arrows); (B) caseous granulomatous inflammation was shown in the resected soft tissue of intra-abdomen.

cultures of the ascites revealed the growth of tapimycin-resistant *Klebsiella pneumoniae*. The patient also showed shortness of breath on the same day, neck and chest CT images indicated TB pneumonia because of the bilateral pleural effusion, pneumothorax with poor expansion of the left lung, and cervical lymphadenopathy. Chest tube was inserted for pneumothorax. The secondary exploratory laparotomy was arranged; marked distention of jejunum, two perforated holes located at 90 and 100 cm distal from Treitz' ligament about 0.5 cm in size, and intra-abdominal ascites were found during surgery. Segmental resection of jejunum & ileum with loop jejunostomy was done aimed to repair the perforated small intestine. Anti-tuberculous medicine was prescribed on the 14th day of hospitalization (the fifth day after the second surgery) with Rifater (Rifampicin 120 mg, isoniazid 80 mg,

pyrazinamide 250 mg) 4 tablets once daily (QD), ethambutol 400 mg 2 tables QD and vitamin B6 50 mg 1 tablet QD. However, next two days around 2,300 mL of black bloody fluid was found in the jejunostomy feeding tube each day, upper gastrointestinal bleeding was suspected. Transfusion of packed RBC and frozen fresh plasma was conducted. Proton pump inhibitor, tranexamic acid, vitamin C and K were prescribed and we interrupted the anti-tuberculous therapy. Another surgery was suggested to treat the possible reperforation but refused by patient's family members. He was passed away on the 18th day of hospitalization in ICU.

## Discussion

Surgical procedure is not considered necessary in the management of abdominal TB because the response to medical treatment is usually good enough. However, diagnosis often requires some forms of surgical intervention in clinical practice. In a retrospective study all of a total of 17 patients underwent diagnostic surgeries,<sup>6</sup> since once abdominal TB is suspected clinically, treatment should not be delayed while awaiting culture. More than 80% of the death occurred within six weeks after the initial presentation approximately.<sup>7</sup> The use of diagnosis modalities should be adjusted according to the protean presentation of abdominal TB for timely diagnosis and early adequate treatment. Our patient was suspected with abdominal TB very early on the day of ED admission base on the findings of physical examination, the intestinal obstruction and lymphadenopathy shown in CT imaging, and the concomitant pulmonary TB lesions on the chest X-ray one day before and the second day after admission. However, to establish the diagnosis of abdominal TB and rule out the possibility of malignancy or other inflammatory diseases still relied on the exploratory laparotomy and sequential pathological findings.

The surgeries in this case were also for therapeutic purposes. Around 20–40% of patients with abdominal TB present an acute abdomen and need surgical management.<sup>8</sup> Obstruction, perforation and adhesion were noted during the first exploratory laparotomy, incidental appendectomy was required. What is even more unusual, bleeding due to intestinal perforation was noted postoperatively and led to the secondary laparotomy, reflected a very severe complication, the

recurrent perforation, was occurred in our patient. In a study included 211 TB peritonitis cases conducted in Taiwan, patients with internal bleeding ie hypovolemic shock have significant higher risk of the mortality, the hazard ratios is 13.35 with 95% confidence interval 5.12 and 34.86,  $p < 0.001$ .<sup>9</sup> Furthermore, severe abdominal TB is suggested to be treated using the combination of surgery and anti-TB medicine, and intravenous form was recommended. The standard medical treatment for TB started after the second surgery awaiting for the abdominal complications to be stabilized. However, possibly due to the disease severity, and in addition, the intravenous anti-TB medicine was not available in our institute, our patient was not able to become one of the survivors of abdominal TB as a result unfortunately.

Many studies have proven that early diagnosis could improve the outcome but challenging, a high index of suspicion is required at all times,<sup>4,6,7,10</sup> especially for clinicians who work in the regions with low incidence, they may be less experienced. Our patient resided in Indonesia before moved to Taiwan three years ago. Indonesia is among one of the five countries which contributed 56% of the global incidence in 2016, with total TB incidence and mortality of 391 and 42 per 100,000 population, respectively.<sup>1</sup> In Taiwan, the TB incidence and mortality were 45.7 and 2.4 per 100,000 population, respectively<sup>11</sup> and remained higher than the developed countries. We believe the health professionals of the two regions have sufficient awareness and ability to deal with abdominal TB, this is also reflected by this case report. The case indicates another goal we have to continue to work on: promoting education to general population, and encouraging patients to seek medical intervention at early stage. Our patient might stand better chance to receive appropriate therapy in earlier stage if he had the awareness and sought for medical advises, since he had pulmonary TB and declared coughing and fatigue for at least one year; his family members declined laparotomy until the symptoms became more severe. Delay diagnosis and inappropriate treatment of abdominal TB is responsible for the mortality rate of 4–12%, and 12–25% is noted in the presence of acute complications.<sup>8</sup> Chest X-ray is a routine and simple way for TB diagnosis, however, less than 25% patients with abdominal TB have concomitant pulmonary lesions.<sup>5,10,12</sup>

In conclusion, we present a case of abdominal

TB, highlight the difficulties in diagnosis and treatment in time, and the necessity of educating both medical personnel and general population.

## Acknowledgments

None.

## Conflicts of Interest Statement

The authors declare that they have no conflict of interest.

## Consent for Publication

The patient provided written informed consent for publication of this report and all accompanying images.

## Ethics Approval and Consent to Participate

Ethical approval is not required for the case report, but this patient signed informed consent for publication.

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